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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,800	05/04/2001	Thomas C. McDonald	CNTR:2063	8826

23669 7590 06/01/2004

HUFFMAN LAW GROUP, P.C.
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EXAMINER

HO, THANG H

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/849,800

Applicant(s)

MCDONALD ET AL.

Examiner

Thang H Ho

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9 and 11-32 is/are rejected.
- 7) ☐ Claim(s) 8 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/18/2002</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) filed on June 18, 2002 has been received and considered. Please see attached PTO-1449.
2. Applicant is reminded of the duty to fully disclose information under 37 CFR 1.56.

Specification

3. Claims 1-32 are presented for examination.
4. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is required in correcting any errors of which applicant may become aware in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Lempel, United States Patent 5,978,909.

As per claims 1, 12-13, 23 and 26, Lempel discloses an apparatus for writing a target address of a taken branch instruction into a branch target address cache (BTAC)

[BTB 145 or SBTB 150] upon execution of the taken branch instruction, the BTAC having a plurality of storage elements for caching target addresses of executed branch instructions, each of the plurality of storage elements [set] comprising first and second entries [ways] [e.g., “Each set 230 contains four ways 232” (FIG. 3b and column 5, lines 31-43). Figure 3b shows that there are four BTB entries 234, one for each way 232] for storing a target address, the apparatus comprising: a global indicator [IP set 210], for specifying a global one of the first and second entries of the BTAC plurality of storage elements [“The IP set 210 indicates the set 230 in the BTB 145 to be evaluated. Lookup module 410 matches the IP set 210 to the corresponding set 230 stored in the BTB 145” (column 6, lines 22-25)]; and branch control, coupled to said global indicator, for selecting one of the first and second entries to write the taken branch instruction target address into based on said global indicator [e.g., logic for selecting a way among the ways, see FIG. 4 and column 6, lines 22-48].

As per claims 2-4, Lempel discloses that the global one of the first and second entries specifies which of the first and second entries was last written to in any one of the plurality of storage elements when both of the first and second entries therein were invalid, wherein said branch control logic selects an opposite of said global one of the first and second entries specified in said global indicator to write the taken branch instruction target address into, wherein said branch control logic updates said global indicator to specify said selected entry [“The four BTB entries 234 (one for each way

232) in the matched set 230 are evaluated. All BTB entries 234 with a valid flag 240 equal to zero are discarded...” (column 6, lines 22-48)].

As per claim 5. The apparatus of claim 4, wherein said branch control logic updates said global indicator in conjunction with the BTAC writing the taken branch instruction target address into said selected entry [see **FIG. 3b**].

As per claim 6, Lempel discloses that the plurality of storage elements also includes a valid indicator associated with each of the first and second entries, for indicating whether the target address stored therein is valid or invalid [see **FIG. 3b, Valid Flag 240**].

As per claims 7, 11, 14-16, 18, 20-21, 28 and 31-32, Lempel discloses that said branch control logic selects one of the first and second entries based on said global indicator only if said associated valid indicators indicate one or more of the entries are invalid in one of the plurality of storage elements that is selected for updating [“**All BTB entries 234 with a valid flag 240 equal to zero are discarded...” (column 6, lines 22-48)**].

As per claims 9, 17, 19, 22, 24-25, 29-30 and 33, Lempel discloses that the BTAC comprises a least recently used indicator associated with each of the plurality of storage elements for indicating which of the first and second entries in said associated

storage element was least recently used [**"Each set 230 also contains a pattern table 256 and a least recently replaced (LRR) field 258"; (FIG. 3b and column 5, lines 41-43)**].

As per claim 27, Lempel discloses that the microprocessor further comprises: an instruction cache [**Cache Memory 110**], indexed by a fetch address; wherein said address selection logic selects said fetch address for reading said BTAC [**e.g., see FIG 1 and column 3, line 56 through column 4, line 8**].

Allowable Subject Matter

7. Claims 8 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Form PTO-892.

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to (703) 872-9306

Art Unit: 2188

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thang H Ho whose telephone number is 703-305-1888. The examiner can normally be reached on Monday-Friday from 7:00 A.M. - 3:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 703-306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thang Ho
Art Unit 2188
May 20, 2004



MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER